

## UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—It has been announced that the chemical fellowship at Magdalen College, to which an election will be made next term, is open to all persons who have qualified for the degree of B.A. at Oxford, and are not in the receipt of an income of more than 300*l.* per annum. The examination will begin on October 3, and will be mainly in the subjects recognised in the honour school of chemistry. Any candidate may submit any dissertations or papers written by him or any evidence of research work done by him.

THE council of the University of Liverpool has, on the recommendation of the university senate, determined to institute a university lectureship in experimental psychology.

PROF. W. H. WATKINSON, at present professor of engineering in the Glasgow and West of Scotland Technical College, has been appointed to the Harrison chair of engineering in the University of Liverpool formerly filled by Prof. Hele-Shaw, F.R.S.

THE governors of the Merchant Venturers' Technical College, Bristol, have decided to award annually to the most suitable candidate who, being a member of the college, has graduated in science at the University of London or gained a similar distinction, a research scholarship of the value of 50*l.*, tenable at the college for one year. The research scholar will be required to undertake some research work either in the department of applied chemistry or in that of engineering. The governors will defray the cost of the apparatus and materials needed for the prosecution of such work.

THE detailed regulations and syllabus for the preliminary examination for the certificate, which will in 1907 take the place of the King's scholarship examination, which pupil teachers have been in the habit of taking at the end of their apprenticeship, have been issued as an appendix to the regulations for the instruction and training of pupil teachers, 1905. The distribution of subjects in the re-cast examination has received the careful consideration of the Board of Education. In order to be successful a candidate must pass a test in the important subjects, including composition and arithmetic, which form part i. of the examination, and also show a reasonable degree of proficiency in English, history, and geography. To quote the circular which has been distributed to local education authorities, training colleges, and pupil teacher centres:—"To these the Board would gladly have added elementary science. They have, however, refrained at present from doing so because, except in fully equipped secondary schools and pupil teacher centres, it is not always possible for candidates to obtain the necessary instruction in practical scientific work; while they are convinced that instruction in science which does not include practical work is of very little value." It is satisfactory to record this frank admission by the Board of Education of the great importance of including elementary science in every scheme of education, whether elementary or secondary. It is to be hoped that every effort will be made by the Board to bring about increased facilities for instruction in elementary science in all schools under their jurisdiction, and not only in those from which pupil teachers proceed to the training college. It is not too much to say that no system of training designed to provide efficient elementary school teachers will prove thoroughly satisfactory which does not subject the teacher in training to a course of practical work in science. Even if it is considered necessary at present to make science an optional subject in this preliminary examination for the certificate, every effort should be made so to improve the equipment of the schools that elementary science may be made obligatory for all candidates at an early date.

A TREASURY Minute upon the recommendations of the university colleges committee has been issued as a Parliamentary paper. The consideration of the final report of Mr. Haldane's committee on the allocation of the grant in aid to university colleges is resumed. The recommendation of the establishment of a permanent committee to advise the Board of Treasury as to the distribution of

the grant in aid is accepted, and an endeavour will be made in the autumn to constitute such a body, which will perform the duties hitherto undertaken by the quinquennial committee of inspection. Some of the colleges have pointed out that the intervention of such a committee may interfere unduly with their internal administration, but the Minute lays it down that the main functions of the committee will be to advise the Board of Treasury as to the kind of education which should be assisted out of the grant, and to satisfy themselves by inspection that the money is being properly applied. These objects can be obtained without any undue interference with the responsibility of the college authorities. Ninety per cent. of the grant is in the future to be allocated on the same general principles as have been adopted hitherto, and such sums as may be given will be secured to the colleges for at least five years. The balance of the grant will be reserved partly for special grants towards the provision of books and apparatus and partly for the encouragement of post-graduate work. The colleges will be expected to make proposals to the advisory committee as regards post-graduate work, showing the nature of the work it is desired to undertake and the assistance the college itself intends to contribute to the work. Parliament is being asked to vote 100,000*l.* for university colleges, and if this is agreed to 89,000*l.* will be distributed and 11,000*l.* reserved for allocation in March next. The amount allotted to each college for the year 1905-6 will be as follows:—Manchester, 12,000*l.*; University College, London, 10,000*l.*; Liverpool, 10,000*l.*; Birmingham, 9000*l.*; Leeds, 8000*l.*; King's College, London, 7800*l.*; Newcastle-on-Tyne, 6000*l.*; Nottingham, 5800*l.*; Sheffield, 4600*l.*; Bedford College, London, 4000*l.*; Bristol, 4000*l.*; Reading, 3400*l.*; Southampton, 3400*l.*; Dundee, 1000*l.*

## SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 9.—"Explosions of Mixtures of Coal-Gas and Air in a Closed Vessel." By L. Bairstow and A. D. Alexander.

## Summary.

Mixtures of coal-gas and air are not inflammable until the volume of coal-gas is greater than one-seventeenth of the combined volumes. Only a very small fraction of the gas then burns, the amount burnt rapidly increasing with increased richness of the mixture until the coal-gas is one-twelfth of the total volume. The least inflammable of the constituents then burns, and combustion becomes and remains complete so long as air is in excess. In these latter cases it is still probable that the constituents burn successively and not simultaneously.

The hypothesis of a specific heat increasing with temperature is not supported by direct experiment, and cannot be proved by any work on the pressures produced by explosion, the authors believing that a proof would require the measurement of temperature.

Direct experiments by Deville at temperatures below 1400° C. have shown that both steam and carbon dioxide are partially decomposed, and this dissociation is therefore taken by us as the sole explanation of the difference between the pressures calculated for explosions in a closed vessel and those actually obtained.

## PARIS.

Academy of Sciences, July 17.—M. Troost in the chair.—On a new method of direct determination of refraction at all heights: M. Lœwy. The author describes and explains the theory of his new method by which atmospheric refraction can be measured by the use of a prism the refracting faces of which are at an angle of 45°.—On an apparatus for producing artificial eclipses of the sun: Ch. André. By the use of such apparatus many theoretical points can be determined in a way not otherwise possible.

—On the infinitesimal properties of non-Euclidean space: C. Guichard.—On the distribution of sugary substances in blood between the plasma and the corpuscles: R. Lépine and M. Boulud. By eliminating certain errors due to glycolysis, the authors find for the corpuscles 22 per cent., and for the serum barely 4 per cent. of sugar.—On the evaluation of errors in the approximate integration

of differential equations: Émile **Cotton**.—A contribution to the study of liquid dielectrics: P. Gourée **de Villemontée**. The author's experiments were made with reference to the influence of the duration of charge, and the electric state of the mass after discharge. The results show that the propagation of electric charges across petrol and paraffin is comparable with that observed in crystalline dielectrics.—Experimental researches on the effect of membranes in liquid chains: M. **Chanoz**. The electromotive force developed by the chain of the general nature  $MR|H_2O|MR$  depends for sign and intensity upon the nature of the membrane, the nature and concentration of the salt solution  $MR$ , and the relative position of the membranes to the liquids.—On fluorescence: C. **Camichel**. Further experiments on the coefficient of absorption in uranium glass when fluorescence is excited.—On the velocity of crystallisation from supersaturated solutions: Charles **Leenhardt**.—On the preparation of binary compounds of metals by means of heating with aluminium: C. **Matignon** and R. **Trannoy**. The great reducing power of aluminium has been utilised to prepare a considerable number of metallic phosphides, arsenides, silicides, and borides.—On the reduction of thorium oxide by amorphous boron, and the preparation of two borides of thorium: Binet **du Jassonneux**.—On the action of chloroacetic esters on the halogen magnesium derivatives of orthotoluidine: F. **Bodroux**.—On the action of ethylamine and isobutylamine on caesium: E. **Rengade**. When ethylamine is condensed on perfectly pure caesium a blue colour appears in the liquid which does not occur with sodium or calcium. In time the metal becomes a mercury-like substance which evolves gas readily, and is considered by the author to be caesium-ethyl-ammonium.—Attempts at reduction in the dinitro-diphenyl-methane series of compounds: H. **Duval**.—On the condensation of chloral with aromatic hydrocarbons under the influence of aluminium chloride: Adolphe **Dinesmann**. By the action of chloral on benzene the author obtains in the given conditions excellent yields of trichloro-methyl-phenyl-carbinol,



A similar condensation takes place with toluene, para-xylene, and anisol.—On 3:3-dimethyl-butyro-lactone: G. **Blanc**.—On the action of acetylene tetrabromide and aluminium chloride on toluene: James **Lavaux**.—On gentio-picrine: Georges **Tanret**.—On coffees without caffeine: Gabriel **Bertrand**. *Coffea Humblotiana* is noteworthy as containing barely a trace of the alkaloid.—On the development of green plants in light, in the complete absence of carbon dioxide, and in an artificial soil containing amides: Jules **Leffèvre**. The presence of the amides enabled plants to find the carbon necessary for the synthesis of both protoplasm and tissues.—On two cases of grafting (*Ipomea purpurea* with *Quamoclit coccinea* and *Helianthus multiflorus* with *Helianthus annuus*): Lucien **Daniel**.—On the disinfectant properties of smokes; attempts at disinfection with the vapour evolved from burning sugar: A. **Trillat**.—On the identification of the skin of the American admiral Paul Jones, 113 years after his death: MM. **Capitan** and **Papillaud**.—On the multiple affinities of the Hoplophoridae: H. **Coutière**.—On a new exploration of the abyss of the Trou-de-Souci: E. A. **Martel**.—On the mineral constituents of the water supplying Paris: L. **Cayeux**.—The hailstorm of July 16: A. **Berget**. Hailstones were found to weigh as much as 70 grams.

#### NEW SOUTH WALES.

**Linnean Society**, May 31.—Mr. T. Steel, president, in the chair.—Notes on the Eucalypts of the Blue Mountains, N.S.W.: J. H. **Maiden** and R. H. **Cambage**. The authors enumerate twenty-seven species and one variety collected by them. One of these, for which they propose the name of *E. Moorei*, is new; it has hitherto been looked upon as a narrow-leaved variety of *E. stellulata*, Sieb., but the juvenile foliage, for example, is very different. The past year was a specially favourable season for natural seedlings of the above genus, and a number of them are described for the first time. Particular notice is devoted to the Blue Mountain form of *E. capitellata*, Sm. Attention is directed to three plants which cannot,

in strictness, be referred to any existing species, and which are looked upon as possible hybrids. The Blue Mountains, with their ready accessibility to both plateaux and valleys, considerable range in elevation, and rich Eucalyptus flora, afford special facilities for a study of the genus.—Notes on the native flora of New South Wales, part iii.: R. H. **Cambage**. This paper refers to the flora of the country between Orange, Dubbo, and Gilgandra, and directs attention to the great change that takes place from climatic causes which are regulated by the change in altitude, the fall in the country from Orange to Gilgandra amounting to about 2000 feet. Although much of the true interior flora is to be found at the latter place, it is noted that a number of plants which are typical of the coastal vegetation are also growing there, and the reason may be traced to the fact that a large sandstone area, chiefly Triassic, extends from Sydney across the Blue Mountains, continuing in broken remnants past Gulgong towards Dubbo and Gilgandra; and many of those plants which are able to withstand the cold of the higher levels cross the mountains and continue on the similar geological formation out towards the western plains. Reference is also made to an interesting species of *Acacia*, known locally as Motherumbung, and having affinities with *A. Gnidium*, Benth., but which in the absence of full material has not yet been identified.—Descriptions of new species of Australian Coleoptera: H. J. **Carter**. Fourteen species are described as new. These are referable to three families and eight genera, namely:—fam. *Tenebrionidae*, *Pterohelæus*, *Encara*, *Menephilus*, *Otrintus*, *Adelium* (five species), and *Coripera* (two species); fam. *Edemeridae*, *Pseudolychus* (two species); fam. *Pedilidae*, *Egestria*.

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